

Madigan Army Medical Center

Referral Guidelines

Cerebrovascular Accident

Symptoms of Stroke or TIA

- Sudden onset of unilateral weakness involving face, arm, trunk, and/or leg.
- Sudden onset of unilateral sensory loss.
- Sudden onset of difficulty with language production or comprehension.
- Sudden onset of gait, balance, or coordination difficulty.
- Sudden impairment of vision including monocular blindness, hemianopsia, or diplopia.

Stroke Diagnosis and Work-up

- Stroke is diagnosed based on a clinical history, neurologic exam, and brain imaging. The type of stroke (hemorrhagic vs. ischemic) and the cause of stroke (i.e. cardioembolism, atherosclerosis, small vessel disease, other) is determined after a detailed diagnostic evaluation as outlined below.
- Any patient with onset of stroke symptoms in the previous week should be evaluated in the Emergency Department. Time is critical as certain stroke treatments can only be used in the first few hours after a stroke. A separate guideline has been established for acute stroke management which can found in the MAMC clinical guidelines.
- If the patient had onset of new stroke symptoms > 7 days ago and is stable with only mild deficits (i.e. sub-acute mild stroke) then an outpatient workup may be performed. Neurologic consultation is not required except in special circumstances (see below). The work-up should include the following:
 - Detailed history of the suspected stroke/TIA event
 - Medical history with attention to vascular risk factors, past cardiac history, and past cerebrovascular events.
 - Vital signs with particular attention to blood pressure
 - Neurologic exam and general physical exam including cardiac and vascular exams.
 - CBC, Chem10, PT, PTT, fasting lipid panel, diabetes screen
 - Brain MRI and MRA (or head CT and CT angiogram)
 - If ischemic stroke is suspected based on cranial imaging, further work-up should include the following
 - Carotid Doppler study (and/or vertebral Doppler if appropriate)
 - EKG
 - Echocardiogram (TTE). A bubble study should be done if age <60 years or if high suspicion for a cardioembolic mechanism.
 - Consider heart monitor to detect intermittent atrial fibrillation
 - Institute secondary ischemic stroke prevention measures as outlined below.
 - Patients with functional deficits should be referred to physical therapy, occupational therapy, and/or speech therapy based on the type and severity of the deficit.
- If the patient has a well documented prior history of a remote ischemic stroke and an appropriate work-up has already been performed, then see secondary ischemic stroke prevention guidelines below. Patients with remote stroke may need to undergo a work-up (as outlined above) if an appropriate diagnostic evaluation was not previously done or is unknown.

Secondary Ischemic Stroke Prevention

- In all patients with stroke (hemorrhagic or ischemic, the following should be done to reduce the risk of a future stroke:
 - Smoking cessation.
 - Body weight evaluation with normalization of BMI to target of 18-25 with dietary changes and physical activity.
 - Treatment of HTN to achieve normal BP currently defined by JNC-7 as <120/80.
- In patients with ischemic stroke or TIA, the following should be done to reduce the risk of a future stroke:
 - Patients with persistent or paroxysmal atrial-fibrillation who do not have contraindications to anticoagulation should be placed on warfarin with goal INR 2.5 (range 2.0 - 3.0).
 - Patients who had a stroke while not taking antiplatelet medications should be initiated on aspirin 81 mg or 325 mg daily. ASA/dipyridamole (Aggrenox) BID or Plavix are acceptable alternative initial antiplatelet agents.
 - Patients whose stroke occurred on ASA should be switched to either dipyridamole/ASA (Aggrenox) BID, OR dipyridamole/ASA (Aggrenox) BID plus an additional ASA 81 mg, OR Plavix 75 mg daily.
 - Vascular surgery referral for patients with >50% carotid stenosis. Endarterectomy is most beneficial in patients with >70% stenosis associated with TIA/stroke.
 - HTN treatment as described above. Diuretics and ACE inhibitors have the most evidence supporting their use in the secondary prevention of ischemic stroke.
 - Screen for diabetes and optimize glycemic control in diabetics.
 - Lipid evaluation and treatment with a statin to achieve LDL goal <100, or <70 for very high risk persons with multiple risk factors.
- Stroke education- patients should be taught the common signs of stroke (see above) and instructed to call 911.

Indications for Specialty Care Referral

- Patients with acute stroke symptoms should be taken to the ER and the on-call neurologist should be notified.
- An outpatient referral to the Neurology Clinic is appropriate for patients with non-acute stroke-like symptoms when, after initial evaluation, there are questions about diagnosis, etiology, imaging findings, or treatment. For ASAP referrals to the Neurology Clinic, providers are requested to call the neurology clinic and speak with a neurology provider.
- Patients with >50% carotid stenosis should be referred to vascular surgery if not previously seen in the last 6 months.
- Referral to physical therapy, occupational therapy, or speech therapy is appropriate for patients who have neurologic deficits that impair function and who have not already completed a course of therapy.

Criteria for Return to Primary Care

Most stroke patients can be followed long term by their primary care provider who should attempt to optimize all vascular risk factors as outlined above.

Last Review for this Guideline: **July 2010**

Referral Guidelines require review every three years.

Maintained by the Madigan Army Medical Center - Quality Services Division
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